

Neue und interessante Milben  
aus dem Genfer Museum XLV.  
Oribatida Americana 6: Mexico II  
(Acari)

by

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With 70 figures

ABSTRACT

**New and interesting mites from the Geneva Museum XLV. Oribatida Americana 6: Mexico II. (Acari).** — The Oribatids from 3 soil samples, collected in 1978, have been studied and 23 species identified of which 21 are described as new to science: *Steganacarus* (1 sp.); *Rhysotritia* (1 sp.); *Solenozetes* (1 sp.); *Microtegeus* (1 sp.); *Kalyptrazetes* (1 sp.); *Ceratorchestes* (1 sp.); *Furcoppia* (1 sp.); *Globoppia* (1 sp.); *Oppia* (6 sp.); *Teratoppia* (1 sp.); *Suctobelbella* (2 sp.); *Ghilarovus* (1 sp.); *Peloribates* (1 sp.); *Ceratozetes* (1 sp.); *Oribatella* (1 sp.); and *Parachipteria* (1 sp.). It was necessary to establish a new subgenus (*Mexicoppia*) in the genus *Furcoppia*. Zoogeographical considerations on the taxa studied are given, especially in view of the northern delimitation of the Neogaea.

INTRODUCTION

For any exact establishment of the northern boundaries of the Neogaea, a knowledge of the Mexican fauna is indispensable. It is therefore rather striking that this area is by no means satisfactorily explored as regards soil zoology, and especially the soil mite fauna. The first and, as far as I know, the only worker who ever studied Mexican soil mites was SELLNICK, in his first brief publication on Oribatids dating back to 1931. This report on the Oribatids contained the description of 2 new species (representing

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also new genera); since that time no new data have been published—which allows the statement that the fauna of this region is virtually unknown.

During my earlier visits in Geneva I had the occasion to study, together with some samples originating from several Central American countries (Dominica, Guatemala), also a smaller material from Mexico (MAHUNKA 1982a), but it was found to contain, by reason of the samples having been collected at the entrance of a cave, only very few species and those not at all characteristic of the general soil fauna.

I have at my disposal now one larger and some smaller soil samples collected by Mr. and Mrs. A. de Chambrier; the material contains 23 species, 21 of which proved to be new to science.

#### LIST OF LOCALITIES

AC/5: Guadalajara: Barranca de Oblatos, 1450 m, (W<sup>1</sup>), 1.XII.1977.

AC/6: Popocatepetl: Tlamecas, 4050 m, (W), + récolte à la main 31.XII.1977.

AC/9: Chiapas: San Cristobal de las Casas, 2300 m, 13.II.1978.

#### LIST OF IDENTIFIED SPECIES

##### Phthiracaridae Perty, 1841

*Steganacarus politus* sp. n.

##### Oribotritiidae Grandjean, 1954

*Rhysotritia comteae* sp. n.

##### Plasmobatidae Grandjean, 1961

*Solenozetes flagellifer* sp. n.

##### Microtegeidae Balogh, 1972

*Microtegeus mexicanus* sp. n.

##### Microzetidae Grandjean, 1936

*Kalyptrazetes desaussurei* sp. n.

##### Metrioppiidae Balogh, 1943

*Ceratorchestes baloghi* sp. n.

*Furcoppia (Mexicoppia) hauseri* subgen. n., sp. n.

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<sup>1</sup> (W): extraction par appareil WINKLER-MOCZARSKI.

**Oppiidae** Grandjean, 1954

- Globoppia centraliamericana* sp. n.  
*Oppia barrancensis* Hammer, 1961  
*Oppia cervifer* sp. n.  
*Oppia dechambrierorum* sp. n.  
*Oppia hippy* sp. n.  
*Oppia tequila* sp. n.  
*Oppia triacantha* sp. n.  
*Teratoppia regalis* sp. n.

**Suctobelbidae** Grandjean, 1954

- Suctobelbella lienhardi* sp. n.  
*Suctobelbella similidentata* sp. n.

**Zetomotrichidae** Grandjean, 1934

- Ghilarovus elegans* sp. n.

**Haplozetidae** Grandjean, 1936

- Peloribates genavensium* sp. n.

**Ceratozetidae** Jacot, 1925

- Ceratozetes aelleni* sp. n.

**Oribatellidae** Jacot, 1925

- Oribatella dechambrieri* sp. n.

**Achipteriidae** Thor, 1929

- Parachipteria neotropicalis* sp. n.

**Galumnidae** Jacot, 1925

- Galumna flabellifera* Hammer, 1958

**ZOOGEOGRAPHICAL CONSIDERATIONS**

No zoogeographical inferences referring to such a vast area should of course be made on the basis of merely 23 species, however a study of this list of species would still allow certain zoogeographical statements:

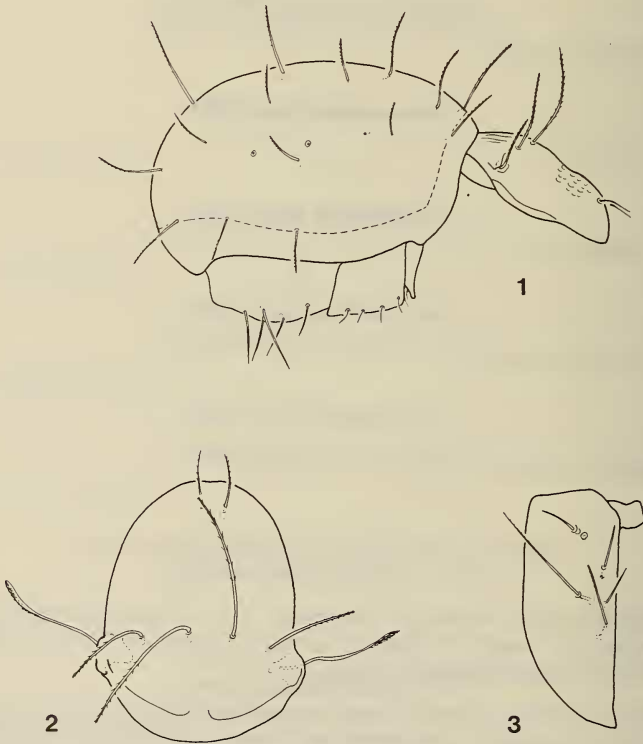
1. The material contains, in nearly equal proportions, genera which are clearly characteristic of the Neogaea (*Ceratorchestes*, *Globoppia*, *Solenozetes*) and others which must unequivocally be regarded as holarctic (*Kalyptrazetes*, *Hermanniella*<sup>1</sup>, etc).

<sup>1</sup> The species in question needs further study, and is not mentioned in the present paper.

The occurrence of the genera *Parachipteria* and *Ghilarovus*, so far known only from the Palearctic Region, is rather striking.

2. Some genera, not belonging to any of the above distribution groups, indicate circumtropical relationships (*Teratoppia*, *Furcoppia*).
3. A study of the relationships of the species seems to indicate the preponderance of species closely related to South American ones, e.g. the nearest allies of almost all *Suctobelba*, *Oppia* and *Teratoppia* species studied here are known from Peru and Bolivia, respectively, and the two formerly described species are surely known also from South America only.

According to these observations and also on the basis of additional material from Guatemala studied simultaneously, the inference seems justified, that the Mexican region under study represents a partially transitional zone harbouring also some Holarctic elements besides the still prevailing influence of the Neotropics. The region should therefore be relegated still to the Neogaea and the limits of this latter are to be drawn farther to the North.



FIGS. 1-3.

*Steganacarus politus* sp. n. — 1: lateral side 2: aspis; 3: anoadanal region.

## DESCRIPTION OF THE SPECIES

*Steganacarus politus* sp. n.

Measurements: Length of aspis: 252-301  $\mu$ , length of notogaster: 485-543  $\mu$ , height of notogaster: 281-364  $\mu$ .

Aspis (Fig. 2): Dorsal surface anteriorly with weak foveolae, basal part with some longitudinal laths. Rostral hairs short, both lamellar and interlamellar hairs long, inner pair longer. Exobothridial hairs represented only by their alveoli. Sensillus also long, weakly arcuate, similar to notogastral hairs, its surface slightly roughened.

Notogaster (Fig. 1): 15 pairs of notogastral hairs present, with great differences in length, hairs  $c_1$ ,  $h_1$  and  $ps_1$  shortest,  $c_3$ ,  $cp$  and  $e_2$  a little longer. All hairs rigid, slightly roughened. Hairs  $ps_2$ ,  $ps_3$  and  $ps_4$  arising on lateral margin.

Anogenital region (Fig. 3): 5 pairs of anoadanal hairs present; 3 pairs ( $an_1$ ,  $an_2$ , and  $ad_1$ ) arranged in one row on inner margin, hairs  $ad_2$  and  $ad_3$  inwards. Hair  $ad_2$  much longer than the others, hair  $ad_1$  shortest.

Material examined: Holotypus: Mexique AC/9; 8 paratypes from the same locality. Holotype and 5 paratypes in the MHNG<sup>1</sup>, 3 paratypes (470-PO-79) in the HHNM<sup>2</sup>.

Remarks: By the form of the notogastral hairs the new species stands closest to *Steganacarus schyzocoma* Hammer, 1962, from Chile. However, its sensillus is long and curved, while in *S. schyzocoma* it is short and fusiform.

*Rhysotritia comteae* sp. n.

Measurements: Length of aspis: 257-281  $\mu$ , length of notogaster: 548-597  $\mu$ , height of notogaster: 368-437  $\mu$ .

Aspis (Fig. 6): Rostrum widely rounded. Lateral carina bifurcate in rostral part of aspis, both branches similarly thick. Sensillus (Fig. 7) hardly but gradually thickened, its distal end strongly aciculated. Hairs of prodorsum greatly differing in length, interlamellar hairs more than twice longer than lamellar ones.

Notogaster (Fig. 4): 14 pairs of rigid, but sometimes weakly curved notogastral hairs present, their distal part strongly roughened.

Anogenital region (Fig. 5): very similar to the other species of this genus, hairs  $an_2$  and  $an_3$  shorter than all other anoadanal hairs.

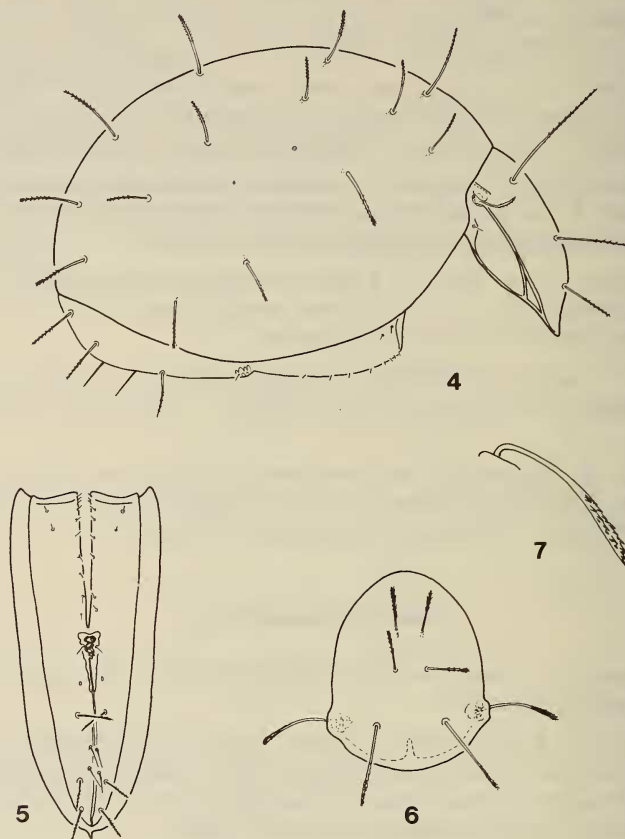
All legs tridactylous.

Material examined: Holotypus: Mexique AC/9; 2 paratypes from the same locality. Holotypus and 1 paratype: MHNG; 1 paratype (469-PO-79): HHNM.

<sup>1</sup> MHNG = deposited in the Muséum d'Histoire naturelle, Genève.

<sup>2</sup> HHNM = deposited in the Hungarian Natural History Museum, Budapest, with identification number of the specimens in the Collection of Arachnoidea.

Remarks: The genus *Rhysotritia* Märkel et Meyer, 1959, so far only contained two species (*R. clavata* Märkel, 1964, and *R. peruensis* Hammer, 1961), both from the Neotropical Region. *R. clavata* has monodactylous legs, *R. peruensis* has a fusiform sensillus (see HAMMER 1961: Plate XLII; Figs 133a) and no bifurcate lateral carina on the aspis.



FIGS. 4-7.

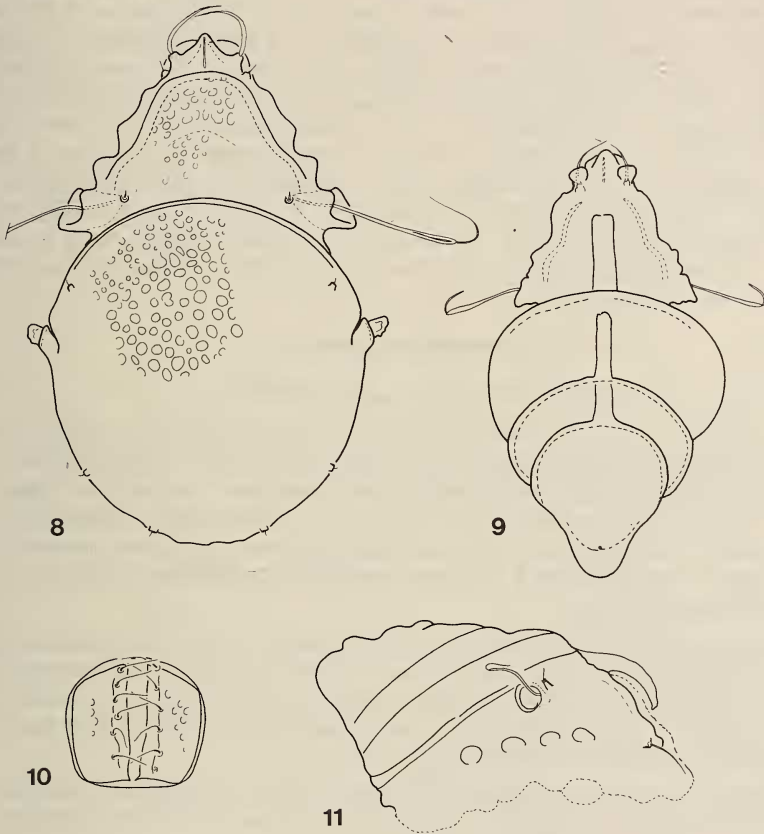
*Rhysotritia comteae* sp. n. — 4: lateral view; 5: anogenital region; 6: aspis; 7: sensillus.

#### *Solenozetes flagellifer* sp. n.

Measurements: Length: 406-428  $\mu$ , width: 257-272  $\mu$  (without exuviae).

Habitus: Shape of body with exuviae in dorsal aspect elongated and pointed posteriorad (Fig. 9), sinuous in lateral aspect (Fig. 11). Exuvial layers connected with a narrow lath displaying a polygonal sculpture. Body covered with thick secretion.

Dorsal side (Fig. 8): Rostrum conical with a deep incision on its surface. Rostral hairs minute, originating laterally on a little tooth. Lamellar hairs weakly thickened, slightly roughened, inserted in a strong apophysis. Prodorsum with a strong inwards curved crest, beginning from bothridia and framing central field of prodorsum. Surface



FIGS. 8-11.

*Solenozetes flagellifer* sp. n. — 8: dorsal side; 9: habitus (sketchily) from above; 10: genital region; 11: habitus (sketchily), lateral view.

of this part—except two narrow and smooth lathlike formations—ornamented by rather large, irregularly scattered foveolae. Interlamellar hairs minute, arising on a little apophysis. Sensillus long, slightly roughened, hardly incrassate, ending in a long, flagelliform seta, but this latter often absent. Notogaster ornamented with rounded foveolae smaller in lateral part, bigger in central part.

Ventral side (Fig. 10): Anogenital region with large foveolae, some also on genital plates. 6 pairs of genital hairs present. Aggenital hairs absent. 3 pairs of adanal hairs in para- and praeanal positions.

Material examined: Holotypus: Mexique AC/9; 5 paratypes (1 nymph) from the same locality. Holotype and 3 paratypes: MHNG, 2 paratypes (471-PO-79): HNHM.

Remarks: The family Plasmobatidae Grandjean, 1961, consists of 3 genera, two of them known by their type-species only. I have reassessed two of them but the third, *Solenozetes* Grandjean, 1931, needs redescription. The relegation of the present new species to one of these genera is problematic. The genus *Plasmobates* Grandjean, 1929, has 7 pairs of genital hairs and a clavate, short sensillus. The genus *Orbiculobates* Grandjean, 1931, has 6 pairs of genital hairs and shows on the dorsosejugal region some long spinae for the fastening of the nymphal exuviae. In *Solenozetes* only the form of the lateral tube is different. Among the species belonging to the family Plasmobatidae *Plasmobates carinatus* Hammer, 1961, occurs in the neotropical region while *P. asiaticus* Aoki, 1973, is known from Japan. In my opinion both species must be placed together with the new one in the genus *Solenozetes*, which needs a complete revision. The new species differs from the others by the sensillus and the irregular sculpture of the notogaster.

#### *Microtegeus mexicanus* sp. n.

Measurements: Length: 354-378  $\mu$ , width: 223-243  $\mu$ .

Dorsal side (Fig. 12): Rostrum elongated. Rostral hairs thin, arising on lateral side of prodorsum. Lamellar hairs much thicker and longer, originating on a small apophysis. Lamellae wide, their dorsal surfaces granulated. Interlamellar region with irregular but strong rugae, basal part with two more sharp ridges. Interlamellar hairs minute. Stalk of sensillus long, its clavus weakly thickened. Notogastral surface divided by conspicuous laths and with a sculpture consisting of rugae and tubercles. Ten pairs of minute notogastral hairs.

Ventral side (Fig. 13): Apodemes well developed, but not all meeting in middle. Sternal apodeme broken before second and fourth apodeme, third apodeme short. Pedotecta 2-3 very large. Epimeral hairs simple, minute. Margin of genital region strongly chitinized. 5 pairs of genital, 1 pair of aggenital, 2 pairs of anal and 2 pairs of adanal hairs developed. All setae minute.

Material examined: Holotypus: Mexique AC/9; 5 paratypes from the same locality. Holotype and 3 paratypes: MHNG, 2 paratypes (472-PO-79): HNHM.

Remarks: The species of the genus *Microtegeus* Berlese, 1917, were recently summarized by BALOGH & MAHUNKA (1974). The new species stands nearest to *M. humeratus* Bal. et Mah., 1974, since then only one similar species was described (*M. similis* Bal. et Mah. 1980) from Cuba. The new species differs from both by the form of the sensillus and the sculpture of the notogaster.

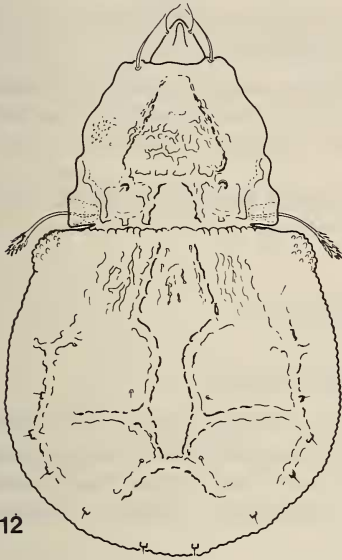
#### *Kalyptrazetes desaussurei* sp. n.

Measurements: Length: 296-310  $\mu$ , width: 204-218  $\mu$ .

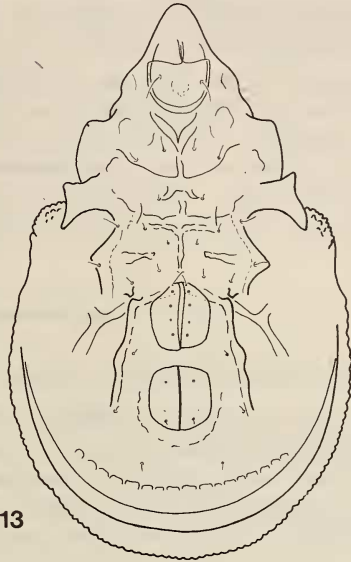
Dorsal side (Fig. 14): Lamellae very broad, covering rostrum in dorsal view, medially adjacent and engaged by a "tooth"; basally also embracing a deep, guttiform interlamellar hollow. Cusps of Lamellae rounded, lamellar hairs originating on ventral



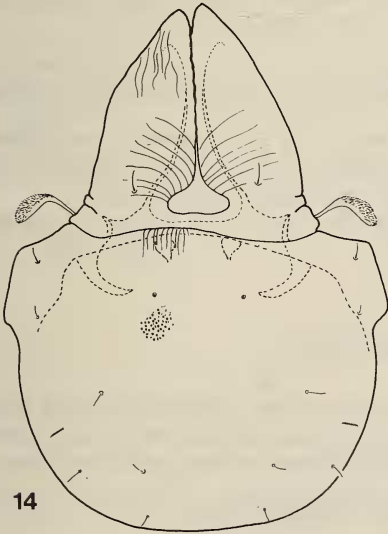
side, weakly thickened, ciliated. Surface of lamellae rugose. Interlamellar hairs well visible, arising on dorsal surface of lamellae. Sensillus reclinate, fusiform, ciliated. Surface of notogaster punctulated, dorsosejugal margin with some weak longitudinal furrows. Some furrows also on pygidial end. All hairs simple, minute.



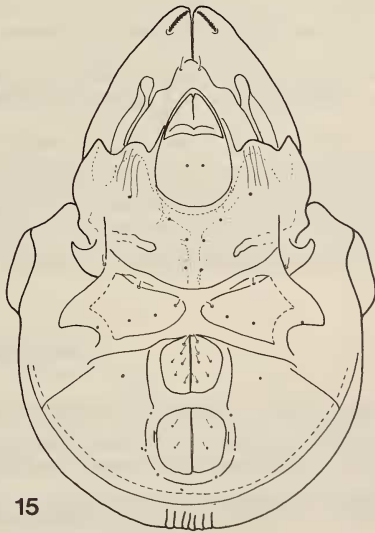
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14



15

FIGS. 12-15.

*Microtegeus mexicanus* sp. n. — 12: dorsal side; 13: ventral side;  
*Kalyptrazetes desaussurei* sp. n. — 14: dorsal side; 15: ventral side.

Ventral side (Fig. 15): Rostrum elongated, beside its conical apex an apophysis each. Rostral hairs minute. Surface of epimere 1 with some lines directed from pedotecta 1 towards middle of body, granulated (as surface of anogenital region). Apodeme 2 short, apodeme 4 and sejugal apodeme very thick, fused in an X-shape before genital plates. Epimeral setae minute. 6 (4+2) pairs of genital and 3 pairs of adanal ( $ad_2$  and  $ad_3$  in praeanal position) hairs present. All hairs of anogenital region minute.

Material examined: Holotypus: Mexique AC/9, 11 paratypes from the same locality. Holotypus and 7 paratypes: MHNG, 4 paratypes (473-PO-79): HNHM.

Remarks: So far only the type-species of the genus *Kalyptzetes* Higgins, 1969 (*Allozetes harpezus* Higgins, 1965) was known, from North Carolina. The new species is easily separable from the type-species by the sculpture of the lamellae and of the notogaster and by the form of the apodemes.

The new species is dedicated to one of the first explorer of Mexico, the famous naturalist Henri de Saussure (1829-1905) from Geneva.

#### *Ceratorchestes baloghi* sp. n.

Measurements: Length: 461-488  $\mu$ , width: 310-328  $\mu$ .

Dorsal side (Fig. 16): Rostrum triangular, laterally with a deep incision at its base visible only in lateral view (Fig. 17). Lamellar cuspides (Fig. 18) long, well separated, lamellar hairs arising terminally. Interlamellar hairs much longer than lamellar ones, reaching lamellar cuspides. Sensillus long, thin setiform, ciliated. Notogaster with 9 pairs of long and 1 pair of minute (*ta*) hairs.

Ventral side: Similar to *C. cornutus* Mahunka, 1982, recently described from Costa Rica but hairs of epimeres 3 longer, mostly ciliated.

Material examined: Holotypus: Mexique AC/9, 24 paratypes from the same locality. Holotypus and 14 paratypes: MHNG, 10 paratypes (474-PO-79): HNHM.

Remarks: The new species stands very close to *C. cornutus*, but differs from it by the much bigger and more oblong notogaster, the form of the rostrum, the lamellar cuspides (Fig. 22), the bothridia (Fig. 23) and the genal tooth (Fig. 21).

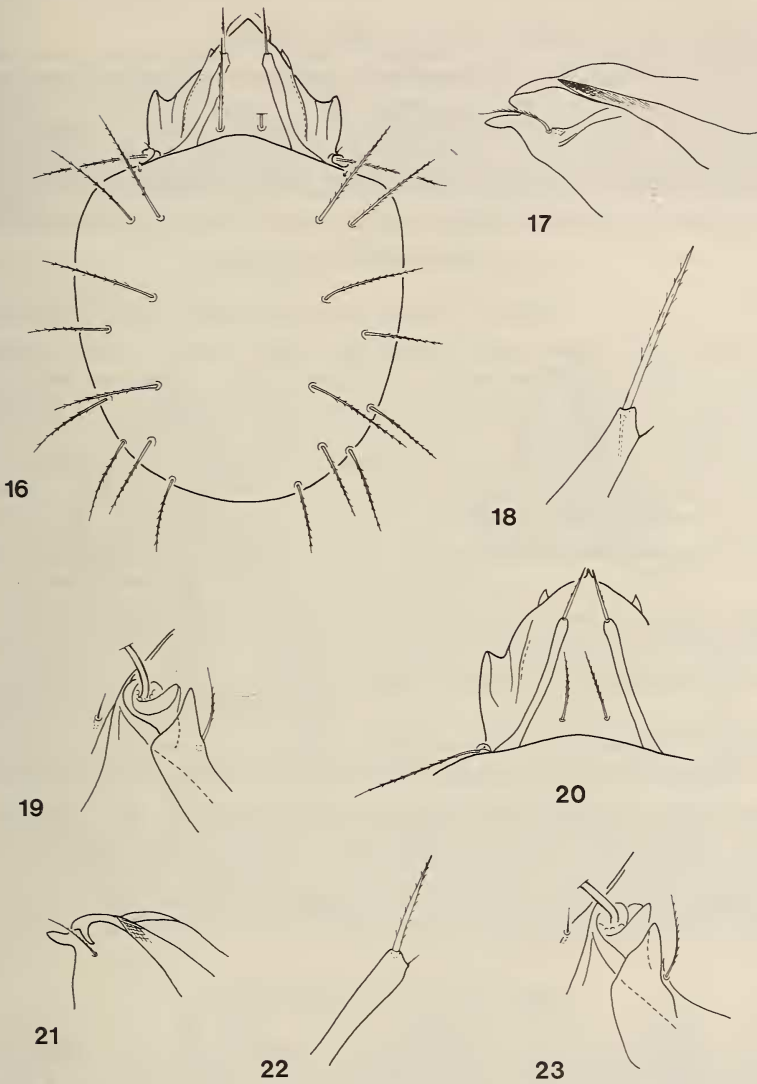
The new species is respectfully dedicated to Prof. Dr. J. Balogh, my teacher and friend, for his invaluable help in my work.

#### *Mexicoppia* subgen. n.

Diagnosis: Rostrum with 3 bigger and 6-8 smaller teeth. Shoulder well developed, large, laterally pointed. Epimeral hairs not rigid and not extremely long, normal and not pilose. Anal plates very narrow anteriorly, broadest in their posterior quarter.

Type-species: *Furcoppia (Mexicoppia) hauseri* sp. n.

Remarks: The combination of the above characters, especially the form of the rostrum, distinguishes the new species from all known *Furcoppia* species.



FIGS. 16-23.

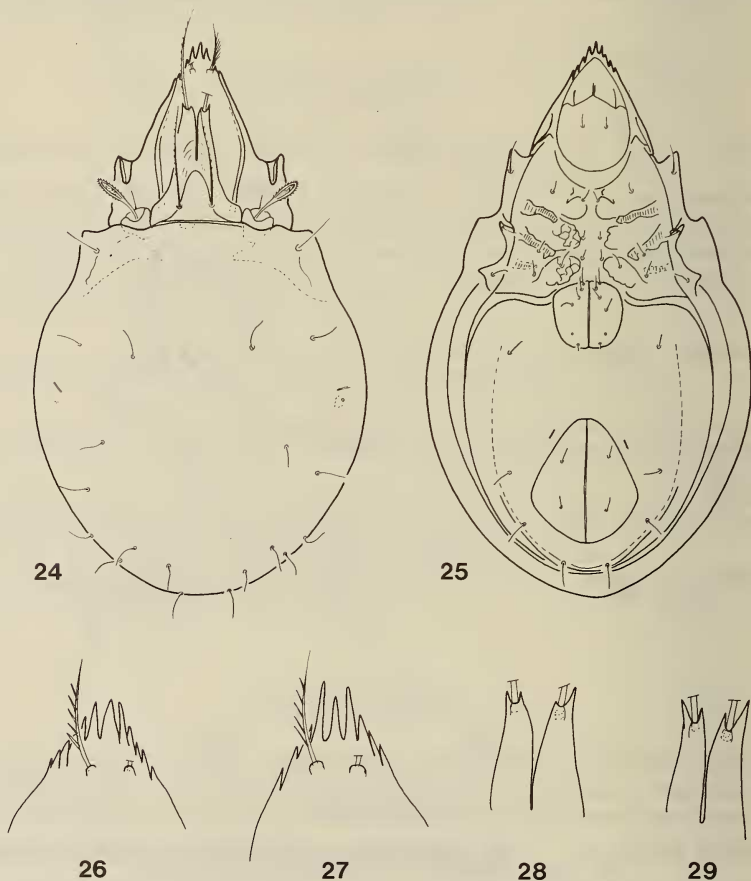
*Ceratorchestes baloghi* sp. n. — 16: dorsal side; 17: rostral part of prodorsum, lateral view.  
18: cuspis of lamella; 19: bothridium, lateral view.

*Ceratorchestes cornutus* Mahunka, 1982. — 20: prodorsum; 21: rostral part of prodorsum,  
lateral view; 22: cuspis of lamella; 23: bothridium, lateral view.

***Furcoppia (Mexicoppia) hauseri* sp. n.**

Measurements: Length: 363-393  $\mu$ , width: 213-247  $\mu$ .

Dorsal side (Fig. 24): 3 median apices of rostrum approximately equal in length, with some variation in form and occasionally also in length (Figs. 26-27). Rostral hairs thick, originating from a small apophysis on prodorsum. Lamellar cuspides excavated, their apices usually asymmetrical (Figs. 28-29). Lamellar hairs long, reaching beyond rostrum, interlamellar hairs similar in length, ending nearly cuspides of lamellae. Sensillus fusiform, anteriorly ciliated. Notogaster with 10 pairs of very thin, but relatively long hairs.



Figs. 24-29.

*Furcoppia (Mexicoppia) hauseri* sp. n. — 24: dorsal side; 25: ventral side; 26-27: variations of rostral apex; 28-29: variations in cuspides.

Ventral side (Fig. 25): Epimeral hairs small, among them hairs *1c* and *3c* longer than the others; not rigid and not proclinate. 6 pairs of short genital, 1 pair of laterally situated aggenital, 2 pairs of anal and 3 pairs of adanal, hairs; *ad*<sub>1</sub> backed by a chitinous crest.

Material examined: Holotypus: Mexique AC/6; 6 paratypes collected with the holotypus. Holotypus and 4 paratypes: MHNG, 2 paratypes (475-PO-79): HNHM.

Remarks: The new species can be distinguished from all known *Furcoppia* species by the characters given in the subgeneric diagnosis. I dedicate the new species to my dear friend Dr. B. Hauser, Curator of the Geneva Museum, for his invaluable help in my work.

### *Globoppia centraliamericana* sp. n.

Measurements: Length: 305-330  $\mu$ , width: 174-183  $\mu$ .

Dorsal side (Fig. 30): Rostrum elongated, rostral hairs thick, heavily ciliated, originating near each other on dorsal surface of prodorsum; both backed by a transversal thin chitinous line. A chitinous crest present also before the thinner, but similarly long lamellar hairs; no other chitinisation discernible in lamellar region. Interlamellar hairs reduced, sometimes only their minute insertion points visible. Exobothridial hairs long, arising from a thick, longitudinal crest. Stalk of sensillus short, its head incrassate, round, ciliated. Interlamellar region with some spots resembling an open flower. 10 pairs of notogastral hairs. Hairs *ta* short, well discernible, inserting near each other; rest of prodorsal hairs long, ciliated except hairs *ps*.

Ventral side (Fig. 31): Apodemes well developed, however, longitudinal sternal apodeme only partly visible. Transversal apodemes terminating free in middle. Five pairs of genital hairs. All hairs short in anogenital region. Hairs *ad*<sub>1</sub> in paranal position, originating from a small chitinous crest.

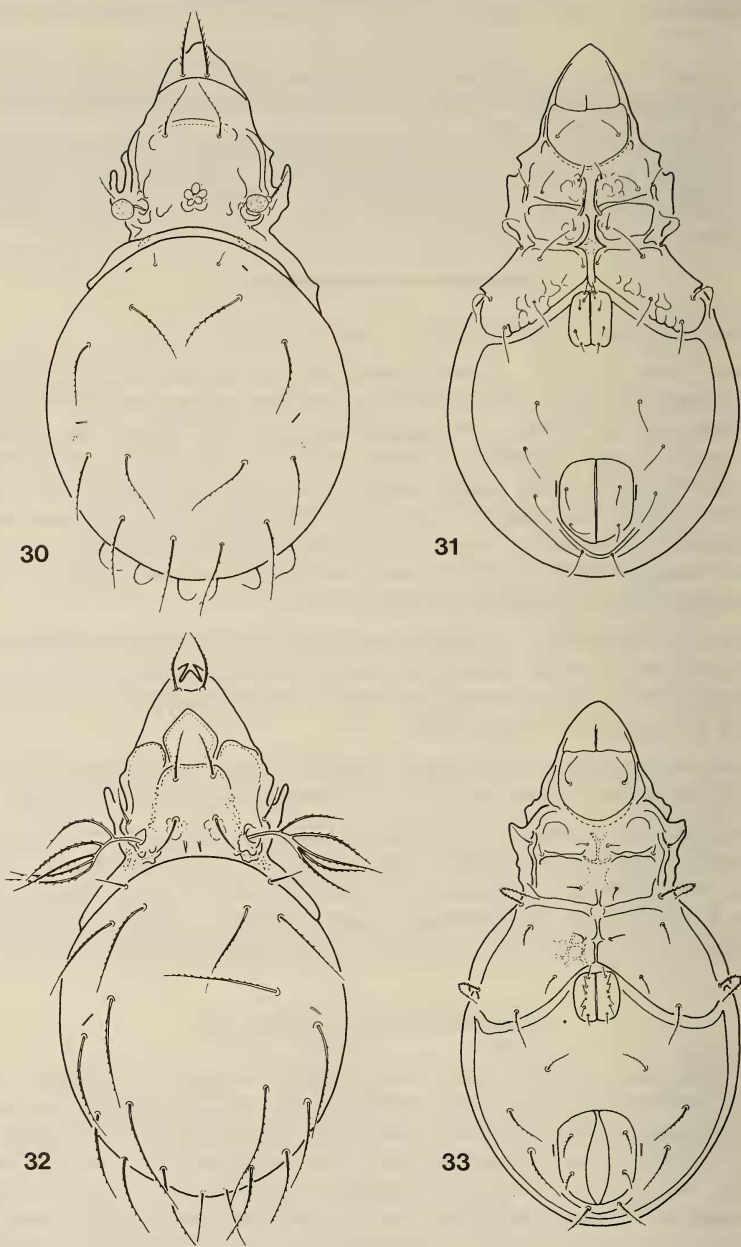
Material examined: Holotypus: Mexique AC/9; 2 paratypes from the same locality. Holotypus and 1 paratype: MHNG, 1 paratype (476-PO-79): HNHM.

Remarks: The members of the genus *Globoppia* Hammer, 1962, were so far known from the southern part of the Neogaea and from New Zealand only. The relegation of the new species to the genus is problematic, because it has only 5 pairs of genital hairs and a reduced pair of interlamellar hairs. However, the thick and penicillately barbed hairs on the ventral surface of tarsus of legs 4 are known also in other *Globoppia* species.

### *Oppia barrancensis* Hammer, 1961

The series from Mexico rather conforms with HAMMER's description based on specimens collected near Lima, Peru. However, the original drawings are schematic and no information is given on the ventral side. The sensillus of the specimens from Mexico is variable, in some specimens the lateral branches of the sensillus are much longer than in the typical form (see HAMMER: Plate XVII, fig. 53a). The specimens from Mexico are smaller (240-250  $\mu$ ) than the Peruvian ones and the three pairs of foveolae in the interlamellar region are framed by a well discernible line. These minor differences appear insufficient for a specific separation: a study of the type-specimen is necessary.

Locality: Mexique AC/9 (10 ex.).



FIGS. 30-33.

*Globoppia centraliamericana* sp. n. — 30: dorsal side; 31: ventral side;  
*Oppia cervifer* sp. n. 32: dorsal side; 33: ventral side.

*Oppia cervifer* sp. n.

Measurements: Length: 324-335  $\mu$ , width: 169-180  $\mu$ .

Dorsal side (Fig. 32): Rostrum with 3 apices separated by 2 deep incisions, middle apex slightly shorter than both lateral ones. Rostral hairs arising near each other on surface of prodorsum, on a transverse lath. Surface of prodorsum with a characteristic network of chitinous laths and costulae, before costulae one lath is similar to a mitre. Basal part of costulae indistinct, bearing some small tubercles. Hairs of prodorsum strong. Sensillus with 5 very long and ciliated branches. Notogaster with 10 pairs of hairs, *ta* visible. Hairs *ta* and *ps*<sub>1</sub> short, others long, strongly ciliated.

Ventral side (Fig. 33): Apodemes thin, weakly developed. Epimeral hairs with only *3c* and *4c* long and ciliated, rest short, simple. Genital plates with 6 pairs of hairs; aggenital and *ad*<sub>1</sub> hairs shorter than hairs *ad*<sub>2</sub> and *ad*<sub>3</sub>; these and anal hairs ciliated.

Genu of leg IV with a very big, smooth spine.

Material examined: Holotypus: Mexique AC/9; 9 paratypes from the same locality. Holotypus and 5 paratypes: MHNG; 4 paratypes (477-PO-79): HNHM.

Remarks: The characteristic sculpture of the prodorsum somewhat resembles that of "*Chavinia*" *paradoxa* Hammer, 1958, but the shape of the sensillus and the rostrum distinguish it sufficiently.

*Oppia dechambrierorum* sp. n.

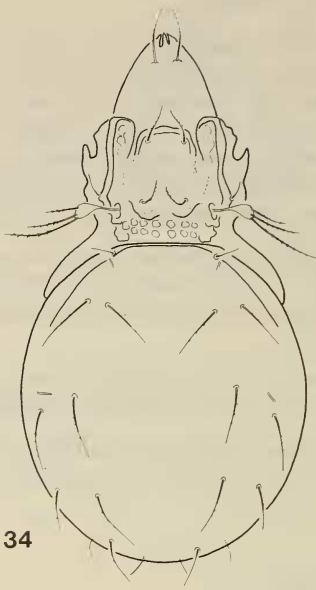
Measurements: Length: 305-359  $\mu$ , width: 164-204  $\mu$ .

Dorsal side (Fig. 34-35): Rostrum tricuspidate, with 2 deep incisions, median apex not shorter than lateral ones. Rostral hairs originating on prodorsum, on small apophyses, near each other. Surface of prodorsum with one transversal and weakly developed longitudinal costulae, strongly convex medially, characteristic for this species-group. Basal part of costulae discontinuous, with tubercles. Starting from bothridia, laterally strong, E-shaped chitinous thickening visible. Prodorsal hair *ro* longest, hairs *in* and *le* about equal in length, all ciliated. Sensillus fusiform, its head emitting 3 (exceptionally 4-5) ciliated branches of various lengths. Basal part of prodorsum with 6 pairs of tubercles between and behind bothridia; exceptionally 1-2 pairs *in* fused medially. Notogaster with 10 pairs of variably long hairs, *ta* minute, 2 pairs short, 7 pairs relatively long; all thin.

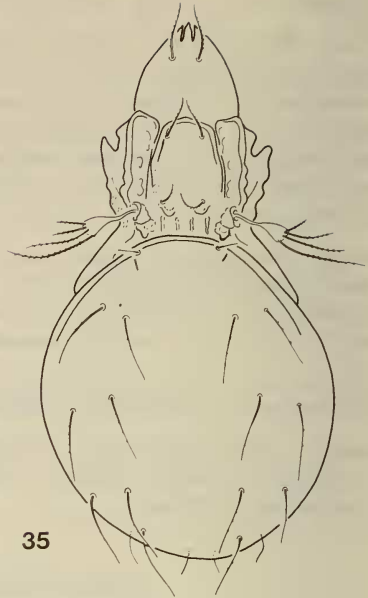
Ventral side (Fig. 36-37): Apodemes weakly developed except *ap.* and *ap. sej.* epimere framed laterally with a thick chitinous lath emitting hairs *1c*. Bordure above sejugal apodeme very thick, dark sometimes entire epimere 2 darker than rest of body (similar to a transversal band). Surface of epimeres with foveolae of unequal size. 6 pairs of genital hairs. Hair *ad*<sub>1</sub> shortest among aggenital and adanal setae. Pori *iad* long.

Material examined: Holotypus: Mexique AC/9; 30 paratypes from the same locality. Holotypus and 18 paratypes: MHNG; 12 paratypes (478-PO-79): HNHM.

Remarks: The new species is related to a species-group represented by *Oppia arcualis* (Berlese, 1913). This group can be subdivided on the basis of the notogastral structure (basal part with or without tubercles). The new species stands nearest to



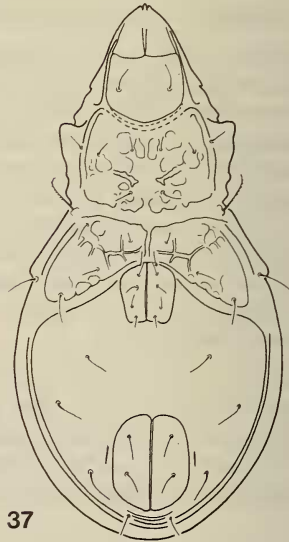
34



35



36



37

FIGS. 34-37.

*Oppia dechambrierorum* sp. n. — 34: dorsal side of holotype; 35: dorsal side of a paratype; 36: ventral side of holotype; 37: ventral side of a paratype.



*O. serrulata* Balogh and Mahunka, 1980, from Cuba, but this species has only 4 pairs of thinner and much longer prodorsal tubercles. The new species is very variable, principally in the form and number of the prodorsal tubercles.

***Oppia hippy* sp. n.**

Measurements: Length: 204-213  $\mu$ , width: 108-114  $\mu$ .

Dorsal side (Fig. 38): Rostrum rounded, medially with an incision (Fig. 39). Dorsal hairs arising on surface of prodorsum, ciliated. Costulae thin, transcostula well developed, together representing a trapeziform configuration, laterally with a chitinous ridge, not connecting it with bothridium. Basal part of interlamellar region medially with 3 chitinous laths and 3 pairs of foveolae. Interlamellar hairs thicker than lamellar ones. Sensillus large, with 8 very long branches. Notogaster with 9 pairs of characteristically spiniform hairs and insertion-points of hairs *ta*. Hair  $r_2$  twice longer than  $ps_3$ , hairs  $ps_1$  and  $ps_2$  much shorter and thinner than the others.

Ventral side (Fig. 40): Apodemes weakly developed except *ap. sej*. Sejugal apodeme in medially and laterally with 2 pairs of sphaerical chitinous thickenings, opposite to internal pair a chitinous crescent originating from genital opening. Pedotecta 2-3 ending in a sharp spur. Epimeral hairs short, their majority straight. 5 pairs of genital hairs present. Aggenital and adanal hairs slightly thickened and rigid, similar to notogastral hairs.

Material examined: Holotypus: Mexique AC/9; 15 paratypes from the same locality. Holotypus and 9 paratypes: MHNG, 6 paratypes (479-PO-79): HNHM.

Remarks: The new species is well characterized by the shape of the sensillus and the costula and by the form of the notogastral hairs.

***Oppia tequila* sp. n.**

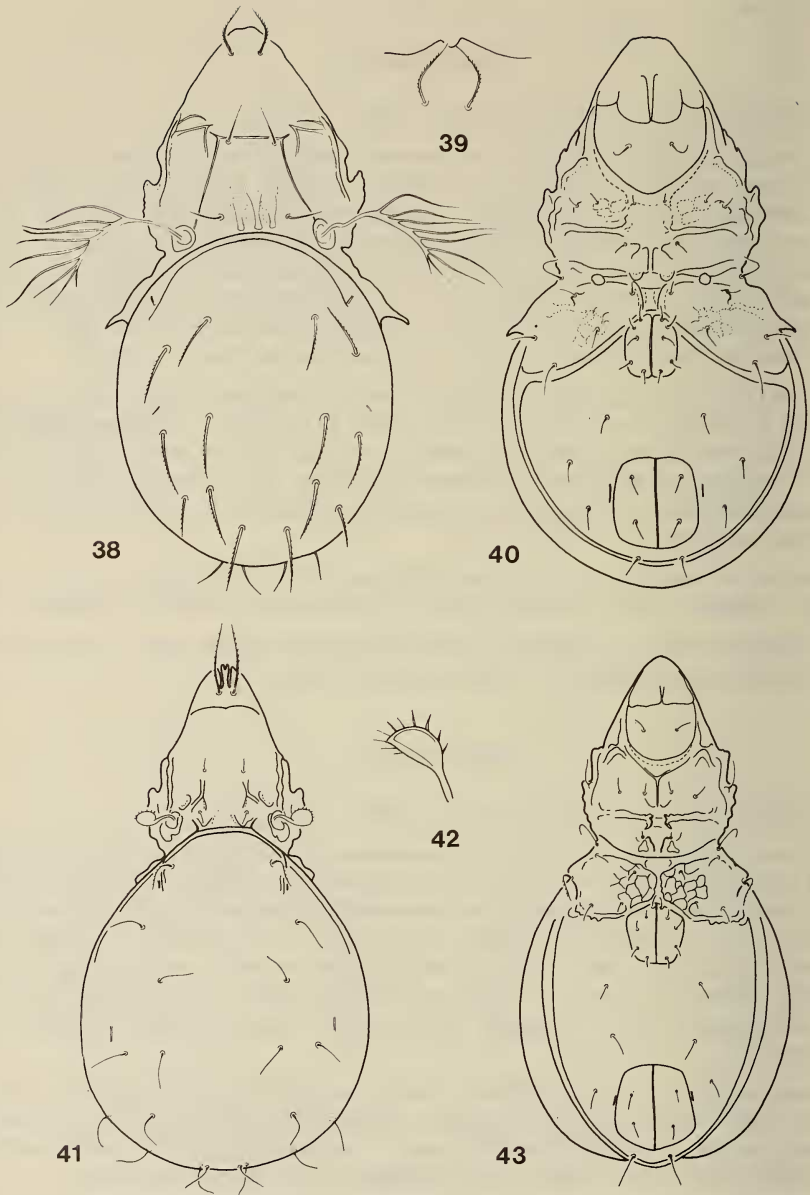
Measurements: Length: 257-281  $\mu$ , width: 132-152  $\mu$ .

Dorsal side (Fig. 41): Rostrum tricuspidate, subdivided by two deep incisions, ending at insertion point of rostral hairs. Median apex concavely excised, with two teeth. Rostral hairs long, lamellar and interlamellar ones very short. Surface of prodorsum with a complicated sculpture, consisting of chitinous laths and ridges. Head of sensillus asymmetric, wide; with 8-9 small cilia on its lateral margin (Fig. 42). Exobothridial region granulated. A short but well developed crista directed backwards from dorsosejugal region, Notogaster with 10 pairs of hairs, all equal in length. Hairs *ta* ciliated.

Ventral side (Fig. 43): Apodemes weakly developed, short; no sternal apodeme; epimeres open, with a polygonal sculpture. Epimeral hairs short, except *1c*, *3c* and *4c*. Posterior margin of epimeral shield with teeth. 5 pairs of genital and 1 pair of aggenital hairs, short; adanal hairs longer, *ad*<sub>1</sub> in postanal, *ad*<sub>3</sub> in praeanal position.

Material examined: Holotypus: Mexique AC/6; 5 paratypes from the same locality. Holotypus and 3 paratypes: MHNG, 2 paratypes (480-PO-79): HNHM.

Remarks: The new species is characterized by the divided rostrum and the sculpture of the prodorsum. On the basis of these characters it can be relegated to



FIGS. 38-43.

*Oppia hippy* sp. n. — 38: dorsal side; 39: rostrum; 40: ventral side;  
*Oppia tequila* sp. n. 41: dorsal side; 42: sensillus; 43: ventral side.

*Beloppia* Hammer, 1968. However, this is a questionable group owing to the many intermediate forms. The new species stands very close to the species-group "*Oppia maritima*". In this group two species (*O. serratiostris* Golosova, 1970, and *O. hauseri* Mah., 1974) have a similar rostral apex, but no crista is present.

#### *Oppia triacantha* sp. n.

Measurements: Length: 233-241  $\mu$ , width: 110-129  $\mu$ .

Dorsal side (Fig. 44): Rostrum widely rounded. Rostral hairs originating on dorsal surface of prodorsum. Costula short, well visible, connected with bothridium by a thin line. A thick transverse lath, not connected with costulae, before insertion point of hairs *le*. Prodorsal hairs *ro* longest, thickest. Sensillus clavate, with 4 longer and 4-5 shorter branches, similar to a hand with fingers spread out. Notogastral hairs short, erect. Hairs *ta* represented only by insertion points.

Ventral side (Fig. 45): Apodemes weakly developed, only *ap. sej.* thick, with two pairs of chitinous tubercles. Opposite to inner ones only a longitudinal, convex lath visible. 5 pairs of genital hairs present. Aggenital and adanal hairs relatively long.

Material examined: Holotypus: Mexique AC/9; 13 paratypes from the same locality. Holotypus and 8 paratypes: MHNG, 5 paratypes (481-PO-79): HNHM.

Remarks: The new species is characterized by the shape of the sensillus, the short costula and by the notogastral hairs; this combination of features is hitherto unknown among its congeners. The somewhat similar *Oppia chulumaniensis* Hammer, 1958, from Bolivia, has considerably more branches on the sensillus (see HAMMER 1958 tabl. XVI. Fig. 66a).

#### *Teratoppia regalis* sp. n.

Measurements: Length: 354-393  $\mu$ , width: 180-218  $\mu$ .

Dorsal side (Fig. 46): Rostrum widely rounded. Rostral and lamellar hairs approximately equal in length, interlamellar hairs much shorter. A pair of foveolae between interlamellar hairs. Sensillus pectinate with 7 longer branches and 1 shorter branch. Notogaster with hairs *ta* minute, hairs *ps* short, all other ones longer and all thin. Hairs *ta*, *te*, *r*<sub>3</sub> and hairs *ti*, *ms* and *r*<sub>2</sub> arising in a nearly straight line.

Ventral side (Fig. 48): Similar to the basic type of the genus. Apodemes hardly visible. Epimeral hairs—especially *1b*, *1c*, *3c* and *4c*—with long cilia. 6 pairs of genital hairs present. Aggenital and adanal hairs long, ciliated. No adanal hairs in postanal position.

Inner side of femur of leg I with a sharply pointed spine (Fig. 47).

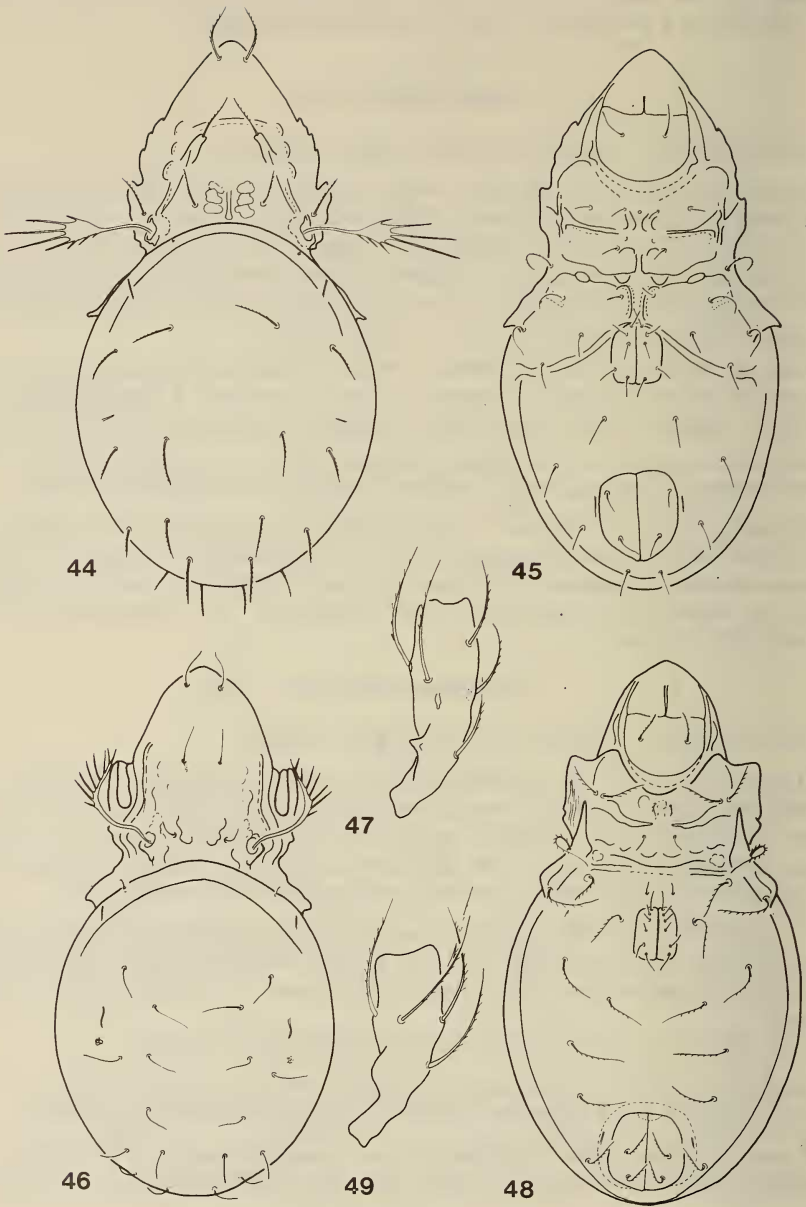
Material examined: Holotypus: Mexique AC/9; 3 paratypes from the same locality. Holotypus and 2 paratypes: MHNG, 1 paratypes (482-PO-79): HNHM.

Remarks: The known "pectinate"—type *Teratoppia* species were recently summarized by BALOGH & MAHUNKA (1978); they can be distinguished by the following key:

1 (2) Sensillus with 10-12 branches; 330  $\mu$ .

Brasilia . . . . . *pluripectinata* Bal. et Mah., 1978

2 (1) Sensillus with less, at most with 8 branches.



FIGS. 44-49.

*Oppia triacantha* sp. n. — 44: dorsal side; 45: ventral side;  
*Teratoppia regalis* sp. n. — 46: dorsal side; 47: femur of leg I; 48: ventral side;  
*Teratoppia pluripectinata* Balogh et Mahunka, 1978. — 49: femur of leg I.

- 3 (4) Hairs *ta - te - ti - ms* arising nearly in a longitudinal line.  
 Africa . . . . . *pectinata* Bal., 1961
- 4 (3) Hairs *ta - te - ti - ms* arising in two lines.
- 5 (6) Small species (272-316  $\mu$ ). Sensillus with 6 branches.  
 Chile . . . . . *brevipectinata* Bal. et Mah., 1978
- 6 (5) Larger species (354-393  $\mu$ ). Sensillus with 8 branches.  
 Mexico . . . . . *regalis* sp. n.

The new species stands extremely near to *T. pluripectinata* Bal. et Mah., 1978. Besides the above differences, the species is distinguished by the shorter notogastral hairs with a longer ciliation and by the form of the femur of legs I (Fig. 49).

#### **Suctobelbella lienhardi** sp. n.

Measurements: Length: 192-213  $\mu$ , width: 101-114  $\mu$ .

Dorsal side (Fig. 50): Rostrum medially with an U-shaped excision, on each side with an obtuse tooth followed by one wide V-formed and two narrow incisions separated by three acute teeth (Figs 51-52). Fenestrate spots wide, framed by a heavy chitinous thickening. Lamellar condylus anteriorly with two protuberances. Sensillus comparatively short, its stalk widened gradually, head oblong, with minute cilia. Anterior margin of notogaster with two distinct and very large teeth on both sides, inner ones emitting long appendages into notogastral surface. Hairs of notogaster very long, ciliated.

Ventral side (Fig. 53): Epimeral region well chitinized, *ap.* 4 exceptionally thick. Epimeral hairs long, 6 pairs of genital, 1 pair of aggenital and 3 pairs of adanal hairs, all long.

Material examined: Holotypus: Mexique AC/9; 3 paratypes from the same locality. Holotype and 2 paratypes: MHNG, 1 paratype (483-PO-79): HNHM.

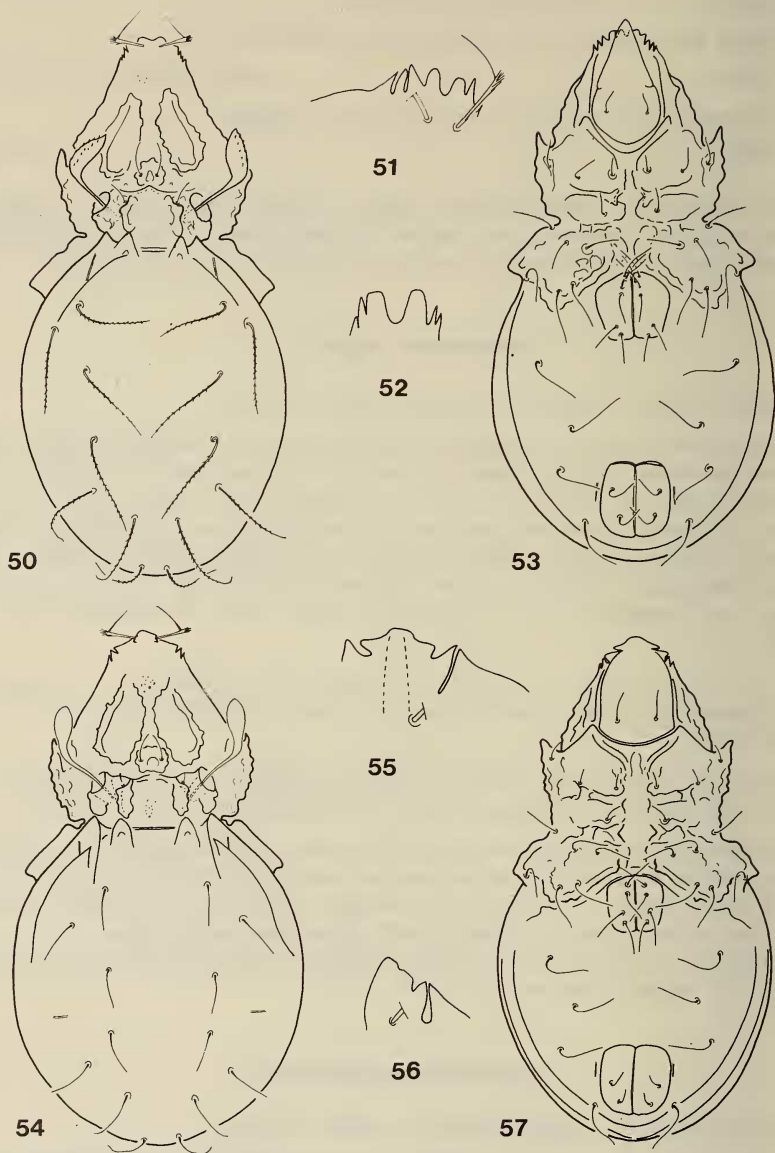
Remarks: The species is characterized by the 6 pairs of genital hairs, the excised rostrum and the long and ciliated notogastral hairs. Aside from the shape of the sensillus, it stands nearest to *S. perdentata* Hammer, 1961, from Peru, but in this species the sensillus is smooth and the anterior teeth of the prodorsum narrow.

I dedicate the new species to Dr. Ch. Lienhard, chargé de recherche of the Geneva Museum, for his help in my work.

#### **Suctobelbella similidentata** sp. n.

Measurements: Length: 222-232  $\mu$ , width: 125-133  $\mu$ .

Dorsal side (Fig. 54): Apex of rostrum obtuse, convex, bilaterally weakly concave, followed by two teeth separated by one shallow and wide and by one narrow and deep incision (Figs 55-56). Fenestrate spots well defined. Interlamellar protuberance without median apex. Sensillus, especially its stalk, long, head oval, smooth. Dorsosejugal region with two pairs of very large, well separated teeth. Hairs of notogaster short, simple.



FIGS. 50-57.

*Suctobelbella lienhardi* sp. n. — 50: dorsal side; 51-52: rostral apex in various views; 53: ventral side.

*Suctobelbella similidentata* sp. n. — 54: dorsal side; 55-56: rostral apex in various views; 57: ventral side.

Ventral side (Fig. 57): Epimeral region well chitinized. Apodemes thick, especially *ap* 4. Hairs arising on epimeres 1-2 short, on epimeres 3-4 much longer. 4 pairs of genital hairs present. Anogenital and adanal hairs also long.

Material examined: Holotypus: Mexique AC/8; 6 paratypes from the same locality. Holotypus and 4 paratypes: MHNG, 2 paratypes (484-PO-79): HNHM.

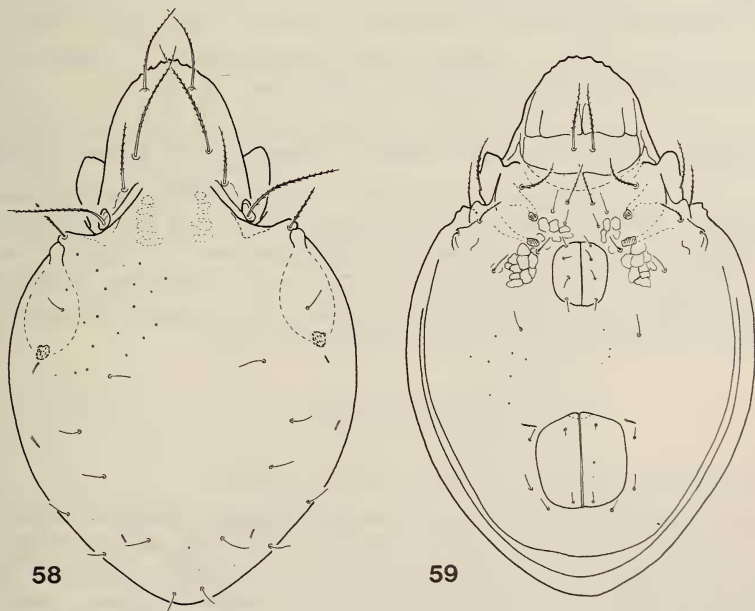
Remarks: The new species belongs to the species-group of *Suctobelbella* Jacot, 1937, which is characterized by a convex rostrum, smooth sensillus and simple notogastral hairs. The new species stands nearest to *S. singularis* (Strenzke, 1950), but the shape of its teeth and of the dorso-sejugal suture are different.

HAMMER (1958) described two very similar species (*S. bifoveolata* and *S. microclava* from Bolivia. The form of the rostrum in all three species is very similar; however in the two species of HAMMER the notogastral hairs are much longer (e.g. *ti* reaching beyond the insertion of *ms*), the notogastral teeth much smaller, and the head of the sensillus thinner. HAMMER (1958) gave no description or figures of the ventral side, therefore a reexamination of the type-material is indispensable.

#### *Ghilarovus elegans* sp. n.

Measurements: Length: 441-510  $\mu$ , width: 281-368  $\mu$ . Sexes considerably different in size,  $\sigma$  much smaller.

Dorsal side (Fig. 58): Rostrum anteriorly with teeth, their shape and number variable. Prodorsal hair *le* longest, *ro* and *in* approximately equal in length. Sensillus



FIGS. 58-59.

*Ghilarovus elegans* sp. n. — 58: dorsal side; 59: ventral side.

thinner than hairs of notogaster, densely ciliated. Notogaster broad, shoulder strong, emitting thick, but not broadened hair *ta*. All other hairs of notogaster very thin. Sculpture of notogaster similar to that of *Zetomotrichus* Grandjean, 1934.

Ventral side (Fig. 59): Apodemes weakly developed. Surface of epimeres with large irregular foveolae. Epimeral hairs rigid, directed forwards, long. Hairs *1a*, *1b*, *1c* and *m* especially long. 4 pairs of genital hairs present. Anal and adanal hairs short, *ad*<sub>1</sub> and *ad*<sub>2</sub> in paranal position.

Material examined: Holotypus: Mexique AC/6; 8 paratypes from the same locality. Holotype and 5 paratypes: MHNG, 3 paratypes (485-PO-79): HNHM.

Remarks: The family Zetomotrichidae was so far represented in South America by two genera (*Mikizetes* Hammer, 1958, and *Rohria* Balogh et Mahunka, 1977). *Rohria* has no relation to the other genera, while *Mikizetes* stands very close, to *Ghilarovus* Krivolutsky, 1966. One of the difference between them consists in the presence of 5 pairs of genital setae in *Mikizetes* and only 4 pairs in *Ghilarovus*. On this basis I assign the new species to *Ghilarovus*; however, a revision of these genera will be necessary. The new species differs from the other species in *Ghilarovus* by the shape of the rostrum and the form of the notogastral hairs (especially hair *ta*).

#### ***Peloribates genavensium* sp. n.**

Measurements: Length: 538-563  $\mu$ , width: 363-384  $\mu$ .

Dorsal side (Fig. 60): Rostrum wide, rounded. Prodorsal hair *le* longest, this one and hair *ro* curved, hair in straight, rigid. Sensillus fusiform, with long cilia. 14 pairs of short, rigid, ciliated notogastral hairs present. 4 pairs of small, round sacculi.

Ventral side (Fig. 61): Apodemes weakly developed, short. Hairs of epimeres short, with minute cilia. Hairs of anogenital region short.

Material examined: Holotypus: Mexique AC/9; 32 paratypes from the same sample. Holotypus and 20 paratypes: MHNG, 12 paratypes (486-PO-79): HNHM.

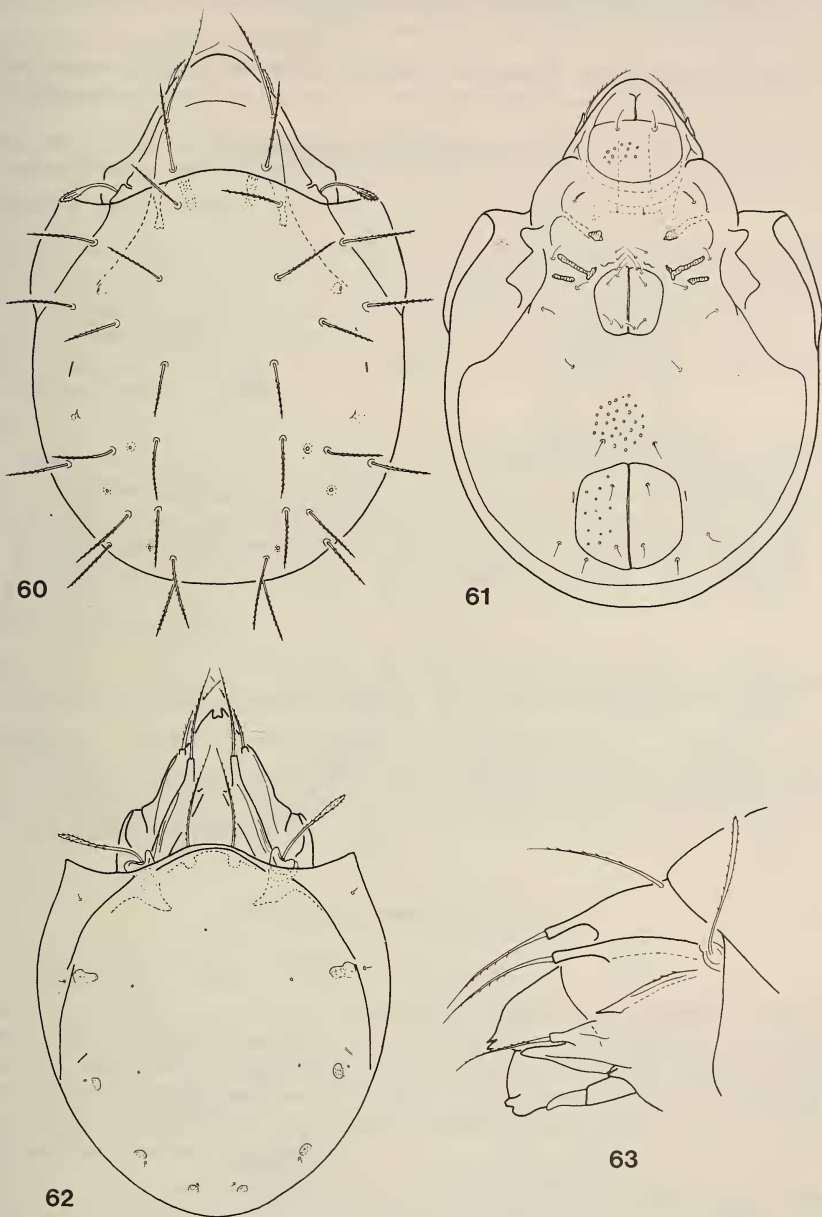
Remarks: On the ground of the length of the notogastral hairs the genus *Pel- oribates* Berlese, 1908, was divided into two species groups. One is characterized by the short hairs (the distance between two hairs not longer than the length of the hairs); this group contains *P. grandis* (Willmann, 1930) and *P. rigidicoma* Hammer, 1958, from the neotropical region. The new species differs from *P. grandis* by a much smaller body, from *P. rigidicoma* by the very long interlamellar hairs.

#### ***Ceratozetes aelleni* sp. n.**

Measurements: Length: 548-582  $\mu$ , width: 378-396  $\mu$ .

Dorsal side (Fig. 62): Rostrum with a deep incision, within its middle a small apex, much shorter than the lateral two. Lamellae with a long, narrow cuspis emitting lamellar hairs. Rostral hairs originating also on a long cuspis. Tutorium (Fig. 63) narrow, relatively short, on its basal part some teeth similar to spines, cuspis simple. Head of sensillus thin, long, ciliated. 10 pairs of minute notogastral hairs, partly represented by alveoli only. 4 pairs of small *areae porosae* present, *Aa* elongated in a transverse direction, other ones round. Surface of notogaster smooth.





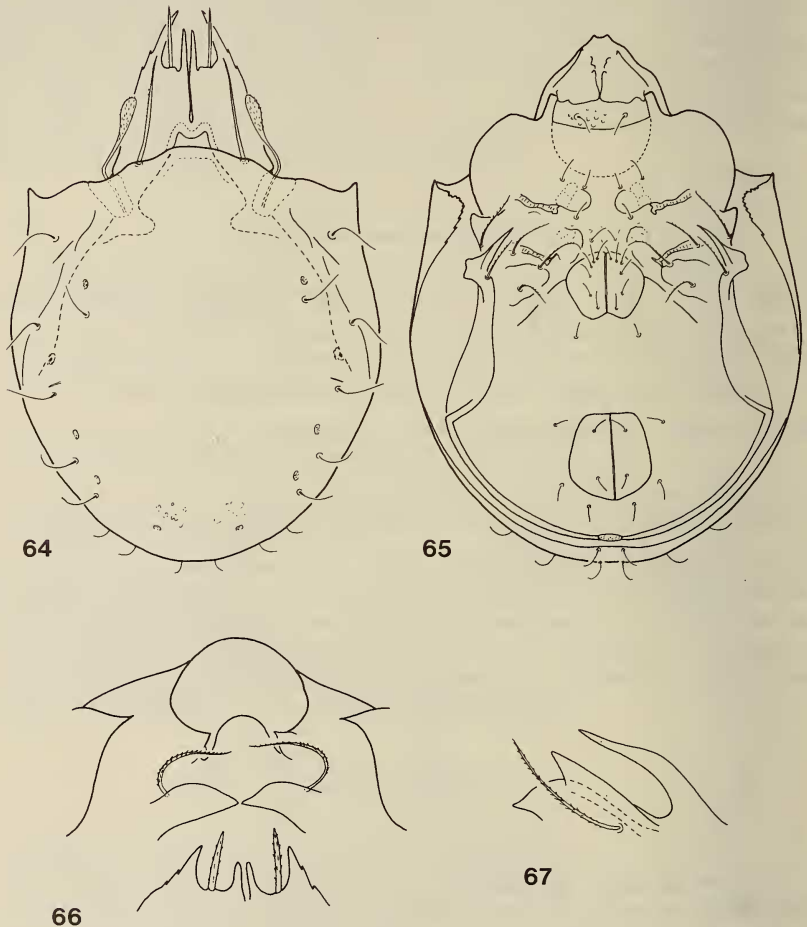
FIGS. 60-63.

*Peloribates genavensium* sp. n. — 60: dorsal side; 61: ventral side;  
*Ceratozetes aelleni* sp. n. 62: dorsal side; 63: prodorsum, lateral view.

Ventral side: Epimeres well framed at margin, but apodemes short. Surface of epimeres with a weak polygonal sculpture. Epimeral hairs long excepting *1a*, *2a* and *3a*. Six pairs of genital, 1 pair of minute aggenital, 3 pairs of adanal and 2 pairs of anal hairs present. *Ad*<sub>1</sub> and *ad*<sub>2</sub> in postanal position.

Material examined: Holotypus: Mexique AC/9; 18 paratypes from the same sample. Holotype and 11 paratypes: MHNG, 7 paratypes (487-PO-79): HNHM.

Remarks: The new species is related to a species-group of *Ceratozetes* Berlese, 1908, characterized by the long, free cusps of the lamellae, the incised rostrum and



FIGS. 64-67.

*Oribatella dechambrieri* sp. n. — 64: dorsal side; 65: ventral side; 66: rostrum, dorsal view; 67: tectum, lateral view.

the thin, not clavate sensillus. It stands closest to *C. gracilis* (Michael, 1884), but not to *C. gracilis* sensu HAMMER, 1961 (see Plate XXII: 57). On the basis of the shape of the *areae porosae* and the sensillus, the new species is easily distinguishable from these species and from all other congeners.

The new species is respectfully dedicated to Prof. Dr. V. Aellen, Director of the Geneva Museum.

#### *Oribatella dechambrieri* sp. n.

Measurements: Length: 281-302  $\mu$ , width: 200-208  $\mu$ .

Dorsal side (Fig. 64): Rostrum (Fig. 66) elongated, each side with one minute tooth. Tectum (Fig. 67) with a long, sharp, simple cuspis. Lamellae comparatively narrow, inner apices parallel to each other, shorter than outer ones; margin of latter ones with 2-3 sharp teeth. Lamellar hairs spiniform, interlamellar hairs setiform, both strongly roughened. Sensillus fusiform. Notogaster with 10 pairs of thin, weakly barbed hairs. Surface of body punctulate.

Ventral side (Fig. 65): Medial setae of epimeres I short, hairs *3b*, *3c*, *4a* and *4c* much longer and thicker than all other barbed ones. Surface of epimeres laterally stronger, medially sporadically punctulate. Custodium long, curved. Genital plates very broad, two plates together much broader than their length. 6 pairs of genital, 1 pair of aggenital, 2 pairs of anal and 3 pairs of adanal hairs present. Hairs *ad*<sub>1</sub> and *ad*<sub>2</sub> in postanal position. Pori *iad* not visible. Inner margins of pteromorphae with many teeth.

All legs monodactylous.

Material examined: Holotypus: Mexique AC/9; 65 paratypes from the same sample. Holotypus and 40 paratypes: MHNG. 25 paratypes (488-PO-79): HNHM.

Remarks: The new species belongs to a species-group of *Oribatella* Banks, 1895, characterized by the monodactylous legs, the smooth, simple cuspis of tectorium and the shape of the lamellar cuspis. The combination of these features distinguishes the new species from all congeners.

#### *Parachipteria neotropicalis* sp. n.

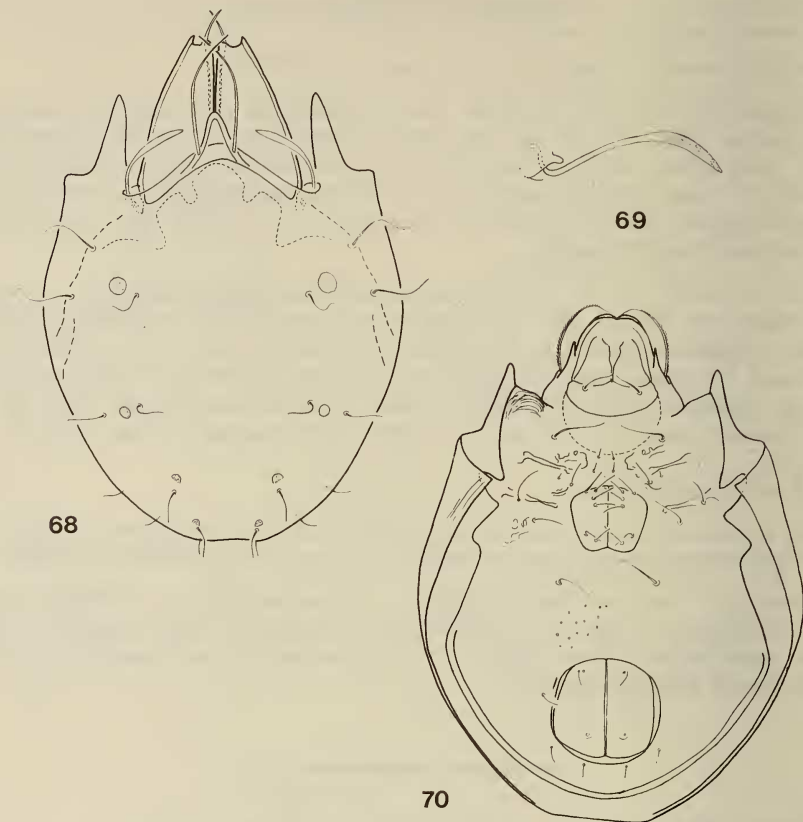
Measurements: Length: 466-495  $\mu$ , width: 315-354  $\mu$ .

Dorsal side (Fig. 68): Cuspis of lamellae concavely excised, lamellar hairs arising on inner cuspis, this cuspis scarcely or not shorter than outer sharp one. Lamellar hairs short, needle-shaped. Interlamellar hairs similar, but much longer. Sensillus (Fig. 69) with a thin, slightly asymmetrical head. 4 pairs of *areae porosae*; *Aa* much longer than the others. *A*<sub>3</sub> minute. 10 pairs of long notogastral hairs present, setae *ps* considerably shorter than the rest, all flagelliform.

Ventral side (Fig. 70): Rostrum wide, medially concave. Rostral hairs barbed. Surface of pedotecta 1 with striation. Epimeres with irregular foveolae. 6 pairs of genital hairs present. Aggenital hairs much longer than anal and adanal hairs; *ad*<sub>1</sub> and *ad*<sub>2</sub> in postanal position.

Material examined: Holotypus: Mexique AC/9; 11 paratypes from the same sample. Holotypus and 7 paratypes: MHNG, 4 paratypes (489-PO-79): HNHM.

Remarks: The members of this genus were so far known only from the Holarctic region. The new species stands nearest to *P. distincta* (Aoki 1959) from Japan, but differs from the latter by a much bigger body and the thinner sensillus (see AOKI (1959), p. 160, Fig. 3c).



FIGS. 68-70.

*Parachipteria neotropicalis* sp. n. — 68: dorsal side; 69: sensillus; 70: ventral side.

#### *Galumna flabellifera* Hammer, 1958

The original description by HAMMER is probably not completely exact, as mentioned also by AOKI (1964). I had no material for comparisons and I have not seen the type. Recently I mentioned conditionally this species from Mauritius (MAHUNKA 1978b, p. 334). The specimen from Mexico differs somewhat from the others and from the descriptions (weakly striated sculpture on prodorsum laterally and between anal

and genital openings); however, this seems insufficient for a specific separation, a study of the types is necessary. It should be noted that the specimens from Mauritius, show also some differences with those from Mexico.

Locality: Mexique AC/5 (6 ex.).

#### SUMMARY

Oribatids found in soil samples from Mexico (extracted in Berlese funnels in Geneva) have been studied. 23 species were found, 21 of them proved to be new to science. A new subgenus is erected for one of them (*Mexicoppia* subgen. n.). Some of the genera were so far known only from the Holarctic, but the greater part of the species are related to others known from South America. Accordingly this region must be regarded as part of the Neogaea.

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